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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/822,691	03/30/2001	William Hreha	PA-Y1007	9223

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EXAMINER	
SALL, EL HADJI MALICK	

ART UNIT	PAPER NUMBER
2157	

DATE MAILED: 11/30/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/822,691	HREHA ET AL.	
	Examiner	Art Unit	
	El Hadji M Sall	2157	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *30 March 2001*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-18* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-18* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

1. **DETAILED ACTION**

This action is responsive to the application filed on March 30, 2001. Claims 1-18 are pending. Claims 1-18 represent dynamic resource allocation architecture for differentiated services over broadband communication network.

2. ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claims 1-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Connors U.S. 6,449,267 in view of Baker et al. 6,775,231.

Connors teaches the invention substantially as claimed including method and apparatus for medium access control from integrated services packet-switched satellite network.

As to claim 1, Connors teaches a system that comprises a gateway that interfaces to an internet provider or corporate network, a local area network edge device, a satellite that provides a communication link between the gateway and the local area network edge device, and one or more personal computers coupled by way of a network to the local area network edge device, a dynamic resource allocation system that supports differentiated services with different levels of priority, comprising:

a dynamic assignment/multiple access (DAMA) communication protocol for transmitting data over the system (column 2, lines 38-47, Connors discloses fig. 1...a communication system using a demand assignment multiple access (DAMA) protocol...DAMA based MAC protocols comprise two primary elements: (1) a bandwidth request mechanism and (2) a mechanism for coordinating transmission).

Connors fails to teach an Internet protocol network.

However, Baker teaches dynamic weighted resource sharing. Baker teaches an Internet protocol network (column 1, lines 6-8, Baker discloses the present invention relates to data networking and more particularly to providing differentiated services on an Internet Protocol network such as the Internet).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Connors in view of Baker to provide an Internet protocol network. One would be motivated to do so to allow access to the Internet.

Connors fails to teach a classifier for identifying specific types of messages.

However, Baker teaches a classifier for identifying specific types of messages (column 5, lines 26-29, Baker discloses a classifier 302 checks a special Differentiated Services field of each packet header to identify the packet's Assured Forwarding class. The packets are separated by Assured Forwarding class),

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Connors in view of Baker to provide a classifier for identifying specific types of messages. One would be motivated to do so to allow policies for sharing resources among multiple service classes to be enforced (abstract).

As to claim 2, Baker teaches the dynamic resources allocation system recited in claim 1 wherein the satellite is a non-processing satellite (column 2, lines 62-64, Connors discloses in a satellite network 100, the AA 108 resides ...at a terrestrial master control station...).

As to claim 3, Connors teaches the dynamic resource system recited in claim 2 wherein the non-processing satellite is a bent pipe communication link (column 2, lines

62-64, Connors discloses in a satellite network 100, the AA 108 resides ...at a terrestrial master control station...).

Connors fails to teach communications link between the local area network edge device and the gateway.

However, Baker teaches communications link between the local area network edge device and the gateway (column 4, lines 56-61, Baker discloses Network 200 represents a Differentiated Services domain. Edge nodes 202 classify incoming traffic into one of a plurality of behavior aggregates. In one embodiment, network 200 implements an Assured Forwarding service and edge nodes 202 classify packets to be forwarded into network 200 into one of four service classes).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Connors in view of Baker to provide the non-processing satellite implements a bent pipe communication link between the local area network edge device and the gateway. One would be motivated to do so to allow policies for sharing resources among multiple service classes to be enforced (abstract).

As to claim 4, Connors teaches the dynamic resources allocation system recited in claim 1 wherein the satellite is a processing satellite comprising an onboard resource management element (column 2, lines 62-64, Connors discloses in a satellite network 100, the AA 108 resides ...at the satellite...).

As to claim 5, Connors teaches the dynamic resources allocation system recited in claim 1 wherein there is a DAMA communication protocol (column 2, lines 38-47, Connors discloses fig. 1...a communication system using a demand assignment multiple access (DAMA) protocol...DAMA based MAC protocols comprise two primary elements: (1) a bandwidth request mechanism and (2) a mechanism for coordinating transmission).

Connors fails to teach an application detection algorithm.

However, Baker teaches an application detection algorithm (column 6, lines 1-6, Baker discloses In one embodiment, an exponential averaging process is used to

determine the packet arrival rate for each service class every time a new packet arrives. Let t.sub.k be the arrival time of a new packet and let l.sub.k be the length of the new packet where K is a sequential identifier identifying the new packet).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Connors in view of Baker to provide the DAMA communication protocol comprising an application detection algorithm. One would be motivated to do so to allow each packet header to identify the packet's Assured Forwarding class (column 5,lines 27-28).

As to claim 6, Connors teaches the dynamic resource allocation system recited in claim 1 wherein the DAMA communication protocol comprises a resource requirement estimation algorithm that is based on queue statistics versus performance statistics (column 12, lines 1-6, Connors discloses the channel selection module...and the random access queue ...to form delay estimates of the last packet in each queue).

As to claim 7, Connors teaches the dynamic resource allocation system recited in claim 1 wherein the DAMA communication protocol comprises a resource request that generates a resource request to set required resources (column 4, lines 45-49, Connors discloses the method comprises...transmitting a resource request having a resource metric from the first node to an allocation of resource units according to the resource metric).

As to claim 8, Connors teaches the dynamic resource allocation system recited in claim 1 wherein the DAMA communication protocol comprises a resource request that sends raw queue statistics to the gateway to set required resources (column 4, lines 60-67, Connors discloses the apparatus comprises...a DAMA channel buffer...the resource unit request module for generating a resource request metric when indicated by an information rate of the input data, an for receiving an allocation or resource units via a receiver...for dequeuing input data from the DAMA; column 11, lines 14-16, Connors discloses FIG. 8 shows block diagram of a first node 112 such as an earth

station 104 employing the technique of dequeuing data from the DAMA queue to the RA queue).

As to claim 9, Connors teaches the dynamic resource allocation system recited in claim 1.

Connors fails to teach the DAMA communication protocol comprises a weighted fair queuing algorithm that performs a weighted fair queuing that drains the queues while effectively utilizing the gateway assigned resources.

However, Baker teaches a weighted fair queuing algorithm (figure 3; column 1, lines 54-60, Baker discloses It is known to support prioritization among different traffic sources or different classes by using queuing techniques such as Weighted Fair Queuing (WFQ), or Weighted Round-Robin (WRR) queuing. These techniques involve dividing traffic among multiple queues and allocating limited packet forwarding bandwidth among the queues according to weights assigned to each queue).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Connors in view of Baker to provide the DAMA communication protocol comprises a weighted fair queuing algorithm that performs a weighted fair queuing that drains the queues while effectively utilizing the gateway assigned resources. One would have been motivated to do so to allow prioritization among different traffic sources or different classes (column 1, lines 54-55).

As to claim 10, Baker teaches the dynamic resource allocation system recited in claim 1 wherein the gateway comprises an algorithm that accumulates all requests received at the same time (column 9, lines 58-62, Connors discloses the measured size of the received data packets is accumulated over time window Tc, as shown in 608, wherein the time window Tc is determined...).

As to claim 11, Connors teaches the dynamic resource allocation system recited in claim 1.

Connors fails to teach the gateway comprises an algorithm that functions to assign each edge device a time and frequency resources based upon service classes and consumer profile for each current and previous.

However, Baker teaches the gateway comprises an algorithm that functions to assign each edge device a time and frequency resources based upon service classes and consumer profile for each current and previous request (abstract, Baker discloses...the technique dynamically adjusts resource allocations for each traffic class based on actual traffic load measured for each service class...; column 1, lines 49-54, Baker discloses to support a Differential Services model such as Assured Forwarding, a network node internal to the service provider network must operate packet schedulers for each of its output interfaces to ensure that each class to be output via the interface receives service corresponding to its defined per hop behavior; column 4,lines 56-61, Baker discloses Network 200 represents a Differentiated Services domain. Edge nodes 202 classify incoming traffic into one of a plurality of behavior aggregates. In one embodiment, network 200 implements an Assured Forwarding service and edge nodes 202 classify packets to be forwarded into network 200 into one of four service classes).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Connors in view of Baker to provide the gateway comprises an algorithm that functions to assign each edge device a time and frequency resources based upon service classes and consumer profile for each current and previous request. One would be motivated to do so to allow a differentiated service model achieved (abstract).

As to claim 12, Connors teaches the dynamic resource allocation system recited in claim 1 wherein the DAMA communication protocol comprises three modes, including fixed assignment, reservation assignment, and random assignment modes (figure 7; column 2, lines 6-7, Connors discloses These methods vary from random access (RA) to fixed bandwidth allocation (FBA) protocols).

As to claim 13, Connors teaches the dynamic resource allocation system recited in claim 12 wherein, in the fixed assignment mode, a certain amount of bandwidth is allocated for the highest priority users (column 2, lines 19-25, Connors discloses terminal acquires a fixed amount of channel resources and maintains this resource for the life of the connection. The only time the amount of channel resource may change is when the connection is preempted by another connection with higher priority).

As to claim 14, Connors teaches the dynamic resource allocation system recited in claim 12 wherein, in the reserved assignment mode, reservation bandwidth is allocated for users to request their demand without knowledge of others request transmissions (column 2, lines 55-62, Connors discloses In the request phase, data bandwidth is reserved by the earth station (ES) by a resource request module 116 forming and transmitting a resource requesting having a resource metric that represents the current value of the earth station's 104 desired bandwidth. This resource request phase allows the ES to communicate their instantaneous bandwidth needs to an allocating agent (AA) 108, which performs bandwidth allocation)

As to claim 15, Connors teaches the dynamic resource allocation system recited in claim 12 wherein, in the random access mode, users transmit the data without making reservation (figure 7, item 708; column 2, lines 5-18, Connors discloses... The simplest form of random access is an access protocol wherein the remote users (in this case, earth terminals) transmit packets in an uncoordinated manner. Since collision-free channel resources cannot be guaranteed with RA methods, QoS guarantees, in terms of packet loss and delay, are very weak...)

As to claim 16, Connors teaches the dynamic resource allocation system recited in claim 1 wherein the DAMA communication protocol comprises a collision resolution algorithm (column 6, lines 34-38, Connors discloses packets use random access channel only during scene changes, collisions on the RA channel only occur if scene changes occurs simultaneously...).

As to claim 17, Connors teaches the dynamic resource allocation system recited in claim 12 wherein the boundary between the random access mode and the reservation mode is movable in order to reduce the number of collisions whenever there are more best effort users using the system (column 5, lines 6-11, Connors discloses since packets are moved from the DQ to RAQ on NL packet 1108 basis, random transmission patterns will remain unchanged until the entire NL packet 1108 has been transmitted. For light network loads, this amounts to a new slot pattern each TDMA frame 1104, minimizing the effort of possible collisions).

As to claim 18, Connors teaches the dynamic resource allocation system recited in claim 1 wherein the DAMA communication protocol comprises a bandwidth request algorithm, a connection acceptance algorithm, a bandwidth usage detection algorithm, and a resource assignment algorithm (figure 3; abstract, Connors discloses...DAMA channel buffer for accepting the input data, a resource unit request module, operatively coupled to the transmitter and the receiver, the resource unit request module for generating a resource request metric when indicated by an information rate of the input data, and for receiving an allocation of resource units via the receiver, and a channel selection module, for dequeuing input data from the DAMA channel buffer to an RA channel buffer according to a predicted channel delay and a delay threshold...).

4. Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to El Hadji M Sall whose telephone number is 571-272-4010. The examiner can normally be reached on 8:00-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ario Etienne can be reached on 571-272-4001. The fax phone number for the organization where this application or proceeding is assigned is 571-273-4010.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

El Hadji Sall
Patent Examiner
Art Unit: 2157

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SUPERVISORY EXAMINER